

AMENDMENTS TO THE CLAIMS

LISTING OF CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Please amend the claims as follows:

1. (Currently amended) A method for adjusting image brightness comprising the steps of:

effecting a computation on color image data represented by a color signal composed of at least three components to obtain pixel lightness components and an average brightness of an image; and

adjusting brightness of an image represented by the color image data based on the lightness components; and ~~the method being characterized in further comprising a step of~~


adjusting the brightness of the image represented by the color image data based on the average brightness of the image, wherein the average brightness of the image is adjusted with color saturation components of the pixels.

2. (Currently amended) [[A]] The method for adjusting image brightness according to claim 1, wherein the step of adjusting the brightness of the image represented by the color image data based on color saturation components of the pixels is effected by computing weighted lightness components of the by weighting the lightness components of the pixels by the color saturation components of the pixels, computing mean values of the weighted lightness components, and adjusting the brightness by the converting the color image data to make the mean values desired values. ✓

Bl
CMT

3. (Currently amended) A system for adjusting image brightness comprising an adjuster having an adjustment unit configured ~~means~~ for effecting a computation on color image data represented by a color signal composed of at least three components to obtain pixel lightness components and an average brightness of an image and adjusting brightness of an image represented by the color image data based on the lightness components, the system being characterized in that the ~~adjuster~~

~~further comprises~~ adjustment means unit is further configured
for adjusting the brightness of the image represented by the
color image data based the average brightness of the image,
wherein the average brightness of the image is adjusted with on
color saturation components of the pixels.


 4. (Currently amended) [[A]] The system for adjusting
image brightness according to claim 3, wherein the adjuster
includes weighted lightness component computing means for
computing weighted lightness components of the pixels by
weighting the lightness components of the pixels by the color
saturation components of the pixels, mean value computing means
for computing mean values of the weighted lightness components,
and conversion means for converting the color image data to make
the mean values desired values.

5. (Currently amended) A device for adjusting brightness of
an image, comprising:

a data acquisition unit configured to acquire image data of
the image; and

an adjustment unit configured to adjust a brightness of the image based on an average brightness of the image, wherein the average brightness of the image is adjusted with a color saturation of the image data from said data acquisition unit.

6. (Previously presented) The device of claim 5, wherein the adjustment unit comprises:

 a lightness computing unit configured to compute lightness of the image data;

a color saturation computing unit configured to compute color saturation of the image data;

a mean value computing unit configured to compute mean values of the lightness computed by the lightness computing unit based on the colour saturation computed by the color saturation unit; and


a converting unit configured to convert the brightness of the image data based on the mean values computed by the mean value computing unit.

7. (Previously presented) The device of claim 6, wherein:

the lightness computing unit is configured to compute the lightness of the image data on individual pixel basis;

the color saturation computing unit is configured to compute color saturations of the individual pixels; and

a converting unit configured to convert the brightness of the image data on individual pixel basis.




8. (Previously presented) The device of claim 6, wherein the converting is configured to achieve a predetermined brightness reflectance value.

9. (Previously presented) The device of claim 8, wherein the predetermined brightness reflectance value is substantially 18%.

10. (Previously presented) The device of claim 6, wherein the lightness computing unit is configured to determine lightness on the basis of at least one of mean values of individual color components, maximum values of individual color components, and brilliance of individual color components.

11. (Previously presented) The device of claim 6, wherein the color saturation computing unit is configured to determine color saturation on the basis of at least one of ratios between maximum individual color components and minimum individual color components and the differences between maximum individual color components and the minimum individual color components.



12. (Previously presented) The device of claim 6, wherein the mean values computing unit is configured to determine mean values on the basis of at least one one of whole image, a center portion of the image, and one or more specific regions of the image.

13. (Currently amended) A method for adjusting brightness of an image, comprising:

acquiring image data of the image; and

adjusting a brightness of the image based on an average brightness of the image, wherein the average brightness of the image is adjusted with a color saturation of the image data.


14. (Previously presented) The method of claim 13, wherein the adjusting step comprises:

computing lightness of the image data;

computing color saturation of the image data;

computing mean values of the lightness of the image data;

and

 converting the brightness of the image data based on the mean values of the lightness of the image data.

15. (Previously presented) The method of claim 14, wherein:


the computing lightness step comprises computing the lightness of the image data on individual pixel basis;

the computing color saturation step comprises computing color saturations of the individual pixels; and

the converting step comprises converting the brightness of the image data on individual pixel basis.

16. (Previously presented) The method of claim 14, wherein the converting step comprises converting to achieve a predetermined brightness reflectance value.

17. (Previously presented) The method of claim 16, wherein the predetermined brightness reflectance value is substantially 18%.



18. (Previously presented) The method of claim 14, wherein the computing the lightness step comprises at least one of:
determining mean values of individual color components;
determining maximum values of individual color components;
and
determining brilliance of individual color components.

19. (Previously presented) The method of claim 14, wherein the computing color saturation step comprises at least one of:
determining ratios between maximum individual color components and minimum individual color components; and

determining the differences between maximum individual color components and the minimum individual color components.

20. (Previously presented) The method of claim 14, wherein the computing the mean values step comprises at least one of:

determining mean values on an entirety of the image;

determining mean values on a center portion of the image;

and

determining mean values on one or more specific regions of the image.

21. (New) The method of claim 1, wherein the average brightness of the image is obtained by any one of the following:

averaging the color saturation components of the pixels to obtain an average color saturation value, adjusting the lightness components of the image based on the average color saturation value to obtain an average lightness value, and designating the average lightness value as the average brightness of the image;

averaging the color saturation components of the pixels to obtain the average color saturation value, selecting pixels to be used to calculate the average lightness value based on the average color saturation value, averaging the lightness values of the selected pixels to obtain the average lightness value, and designating the average lightness value as the average brightness of the image; and

averaging and obtaining a variance of the color saturation components of the pixels to obtain the average color saturation value and the variance, selecting pixels to be used to calculate the average lightness value based on the average color saturation value and the variance, averaging the lightness values of the selected pixels to obtain the average lightness value, and designating the average lightness value as the average brightness of the image.

22. (New) The system of claim 3, wherein the adjustment unit is configured to obtain the average brightness of the image is by any one of the following:

averaging the color saturation components of the pixels to obtain an average color saturation value, adjusting the lightness components of the image based on the average color saturation value to obtain an average lightness value, and designating the average lightness value as the average brightness of the image;

averaging the color saturation components of the pixels to obtain the average color saturation value, selecting pixels to be used to calculate the average lightness value based on the average color saturation value, averaging the lightness values of the selected pixels to obtain the average lightness value, and designating the average lightness value as the average brightness of the image; and

averaging and obtaining a variance of the color saturation components of the pixels to obtain the average color saturation value and the variance, selecting pixels to be used to calculate the average lightness value based on the average color

saturation value and the variance, averaging the lightness values of the selected pixels to obtain the average lightness value, and designating the average lightness value as the average brightness of the image.

23. (New) The system of claim 5, wherein the adjustment unit is configured to obtain the average brightness of the image is by any one of the following:

averaging the color saturation components of the pixels to obtain an average color saturation value, adjusting the lightness components of the image based on the average color saturation value to obtain an average lightness value, and designating the average lightness value as the average brightness of the image;

averaging the color saturation components of the pixels to obtain the average color saturation value, selecting pixels to be used to calculate the average lightness value based on the average color saturation value, averaging the lightness values of the selected pixels to obtain the average lightness value,

and designating the average lightness value as the average brightness of the image; and

averaging and obtaining a variance of the color saturation components of the pixels to obtain the average color saturation value and the variance, selecting pixels to be used to calculate the average lightness value based on the average color saturation value and the variance, averaging the lightness values of the selected pixels to obtain the average lightness value, and designating the average lightness value as the average brightness of the image.

24. (New) The method of claim 13, wherein the average brightness of the image is obtained by any one of the following:

averaging the color saturation components of the pixels to obtain an average color saturation value, adjusting the lightness components of the image based on the average color saturation value to obtain an average lightness value, and designating the average lightness value as the average brightness of the image;

U.S. Application No. 09/271,259
Docket No. 2091-0189P
October 30, 2003
Art Unit: 2612

averaging the color saturation components of the pixels to obtain the average color saturation value, selecting pixels to be used to calculate the average lightness value based on the average color saturation value, averaging the lightness values of the selected pixels to obtain the average lightness value, and designating the average lightness value as the average brightness of the image; and

averaging and obtaining a variance of the color saturation components of the pixels to obtain the average color saturation value and the variance, selecting pixels to be used to calculate the average lightness value based on the average color saturation value and the variance, averaging the lightness values of the selected pixels to obtain the average lightness value, and designating the average lightness value as the average brightness of the image.